

WHAT IS CLAIMED IS:

1. A cytosolic rPLA<sub>2</sub> enzyme derived from RBC cytosol characterized by the ability to produce arachidonic acid dependent on the presence of a calcium ion, having a molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg.
2. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme is not inhibited by DTT (dithiothreitol) or mepacrine (sPLA<sub>2</sub> inhibitor).
3. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein the enzyme is inhibited by AACOCF<sub>3</sub> (arachidonylfluoromethyl ketone).
4. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein the enzyme is activated by a divalent metal cation.
5. The cytosolic rPLA<sub>2</sub> enzyme of claim 4, wherein the divalent metal cation is selected from the group consisting of Zn<sup>2+</sup>, Fe<sup>2+</sup>, Cu<sup>2+</sup>, Sr<sup>2+</sup>, Ba<sup>2+</sup>, Mn<sup>2+</sup>, and Mg<sup>2+</sup>.
6. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme is characterized in that it does not react with an anti-cPLA<sub>2</sub> antibody.
7. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme is characterized in that it does not react with an anti-sPLA<sub>2</sub> antibody.
8. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme is originated from human RBC.
9. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme is originated from bovine RBC.
10. The cytosolic rPLA<sub>2</sub> enzyme of claim 1, wherein said enzyme has a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg.
11. A method for preparing a purified cytosolic rPLA<sub>2</sub> enzyme, comprising:  
preparing a cytosolic fraction from red blood cells (RBCs); and  
subjecting the cytosolic fraction to one or more column chromatography techniques selected from the group consisting of butyl-Toyopearl hydrophobic

column chromatography, phenyl-5PW hydrophobic HPLC column, DEAE-5PW HPLC column chromatography, Sephacryl S-300 gel filtration column chromatography, superose 12 gel filtration FPLC column chromatography, and Mono Q FPLC column chromatography, or a combination thereof; and

isolating the purified cytosolic rPLA<sub>2</sub> enzyme, wherein the purified rPLA<sub>2</sub> enzyme is characterized by the ability to produce arachidonic acid dependently to calcium ion, having a molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg.

12. The method of claim 11, wherein the purified rPLA<sub>2</sub> enzyme is characterized by the ability to produce arachidonic acid dependently to calcium ion, having a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg

13. A method for producing an antibody to a rPLA<sub>2</sub> enzyme, comprising:

isolating the rPLA<sub>2</sub> enzyme, wherein the rPLA<sub>2</sub> is characterized by the ability to produce arachidonic acid dependent on the presence of calcium, having a molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg;

providing an antigenic amount of the rPLA<sub>2</sub> enzyme to a host; and

isolating serum from the host, wherein the antibody to the rPLA<sub>2</sub> enzyme is present in the serum.

14. The method of Claim 13, wherein the rPLA<sub>2</sub> is characterized by the ability to produce arachidonic acid dependent on the presence of calcium, having a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg

15. An anti-rPLA<sub>2</sub> enzyme specific antibody, wherein the antibody reacts with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid dependent on the

presence of calcium, having a molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg.

16. The antibody of claim 15, wherein said antibody is characterized in that react with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid dependent on the presence of calcium, having a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg.

17. The antibody of claim 15, wherein said antibody is characterized in that the antibody does not react with cPLA<sub>2</sub> or sPLA<sub>2</sub>.

18. A pharmaceutical composition comprising:

a therapeutically effective amount of an antibody, wherein the antibody reacts with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid in a calcium dependent manner, having a molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg and a pharmaceutically acceptable carrier.

19. The pharmaceutical composition of Claim 18, wherein the antibody reacts with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid in a calcium dependent manner, having a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg.

20. A pharmaceutical composition comprising a therapeutically effective amount of EA4 (7-chloro-6-[4-(diethylamino)phenyl]-5,8-quinolinedione) compound and a pharmaceutically acceptable carrier.

21. A method of treating a disease caused or exacerbated by Ca<sup>2+</sup> dependent release of arachidonic acid comprising:

administering to a subject an effective amount of an anti-rPLA<sub>2</sub> specific antibody, wherein the antibody reacts with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid in a calcium dependent manner, having a

molecular weight of about 42kDa determined by SDS-PAGE, an isoelectric point from about 3.9 to about 4.1, having maximum activity at a pH range from about 9.5 to about 10 and having a specific activity of about 5.6 nM/min/mg and a pharmaceutically acceptable carrier, whereby a symptom of the disease is alleviated.

22. The method of Claim 21, wherein the antibody reacts with an rPLA<sub>2</sub> enzyme characterized by the ability to produce arachidonic acid in a calcium dependent manner, having a molecular weight of 42kDa determined by SDS-PAGE, an isoelectric point from 3.9 to 4.1, having maximum activity at a pH range from 9.5 to 10 and having a specific activity of 5.6 nM/min/mg.

23. A method of treating a disease caused or exacerbated by Ca<sup>2+</sup> dependent release of arachidonic acid comprising:

administering to a subject in need thereof an effective amount of an rPLA<sub>2</sub> inhibitor and a pharmaceutically acceptable carrier, whereby a symptom of the disease is alleviated.

24. The method of claim 23, wherein the rPLA<sub>2</sub> inhibitor is EA4 (7-chloro-6- [4-(diethylamine)phenyl]-5,8-quinolinedione).